Estimating ET using scintillometers and satellites in an irrigated vineyard in the Costa De Hermosillo, Sonora, Mexico

M. MULDER¹, J. A. LOPEZ-IBARRA², C. J. WATTS³, J. C. RODRIGUEZ⁴, O. K. HARTOGENSIS¹ & A. F. MOENE¹

1Meteorology and Air Quality Group, Wageningen University, Wageningen 6701 BH, Netherlands
marielle.mulder@wur.nl
2Organismo de Cuenca Noroeste, Comisión Nacional del Agua, Hermosillo, Sonora 83280, Mexico
3Department of Physics, University of Sonora, Hermosillo, Sonora 83280, Mexico
4Department of Agriculture, University of Sonora, Hermosillo, Sonora 83280, Mexico

Abstract Visible data from geostationary satellites may be combined with vegetation index data and Land Surface Temperature data from MODIS to provide estimates of incoming solar radiation and actual evapotranspiration at 1 km resolution over large areas. The methodology is evaluated using data from a optical scintillometer at an irrigated vineyard site in northwest Mexico. In general, the satellite-based estimates for ET are about 11% lower than the ET estimated with the scintillometer. These results are similar to those obtained for sites in Africa using Meteosat data, and the errors compare favourably to other methods to estimate ET using satellite data.

Key words evapotranspiration; geostationary satellite; large aperture scintillometer